Amendments to the Specification

The paragraph starting at page 1, line 16 and ending at line 21 has been amended as follows.

The present invention relates to a battery residual capacity detection method and a printing apparatus using the method, and more particularly, to a battery residual capacity detection method applied to a portable inkjet printing apparatus with both ~~AC/DC~~ AC and DC power sources.

The paragraph starting at page 3, line 11 and ending at line 17 has been amended as follows.

For this purpose, conventionally, voltage detection is performed in a status where the battery is under a predetermined load while the motor held in a stopped state is intentionally excited. The intentional excitation of a motor held in a stopped state for battery voltage detection will be referred to as "dummy excitation".

The paragraph starting at page 5, line 4 and ending at line 16 has been amended as follows.

In this operation sequence of a printing apparatus, it is also necessary to detect a battery voltage during printing using a printhead. For example, upon printing character patterns such as a text, printing time is not so long and the battery residual capacity causes no problem[[,]]; however, upon printing a photograph, a figure or the like, it takes a comparatively long time by the completion of printing. In such case, there is a possibility that the battery residual capacity is reduced during the printing and termination processing cannot be normally performed. For this reason, it is necessary to perform battery voltage detection during printing.

The paragraph starting at page 5, line 24 and ending at page 6, line 4 has been amended as follows.

On the other hand, one of the significant capabilities of a printing apparatus is printing speed. Particularly, a printing speed when printing is continuously performed on plural print sheets (continuous printing) is represented as throughput (in ppm (~~paper~~ pages per minute), i.e., the number of print sheets per minute). This is an indicator of printing speed of the printing apparatus.

The paragraph starting at page 19, line 8 and ending at line 18 has been amended as follows.

Note that, since the printing apparatus is operable with both an AC power source and a DC (battery) power source, even if the AC adapter (not shown) is pulled out when the apparatus operates with AC electric power supplied from the AC adapter, the apparatus can still continue its operation with electric power supplied from the DC (battery) power source. Thus, the printing apparatus has a mechanism to discriminate AC adapter driving from battery driving. Since such mechanism is well known, the detailed explanation thereof will be omitted.

The paragraph starting at page 20, line 8 and ending at line 25 has been amended as follows.

In Fig. 6, the residual capacity control of the present embodiment is made based on the result of comparison between battery residual capacity (RES) and three threshold values a, b and c (a>b>c). That is, if RES > a,b holds, a residual capacity indication (indicating that the amount of residual capacity is large or medium) is made on the charge indicator 909. If ~~(c<)~~ c≤ RES ≤ b holds, a residual capacity warning indication (the amount of residual capacity is small) is made on the charge indicator 909 of the printer 800 and a display of the host device 610 or the like by using drivers installed in the host device 610. If RES ≤ c holds, a residual capacity error indication is made on the charge indicator 909 of the printer 800 and the display of the host device 610 or the like by using

the drivers installed in the host device 610, and termination processing such as capping of the printhead 105 is performed.

The paragraphs starting at page 30, line 11 and ending at page 31, line 10 have been amended as follows.

The second control is to provide a mode where hold excitation of the conveyance motor 118 and the carriage moving operation of the carriage motor 114 do not overlap (cross off mode), i.e., the hold excitation and the carriage moving operation do not concurrently occur, then if it is once determined from the mean value of the above-described five detection results that the battery residual capacity has become the error level (i.e., RES $\leq$ c), change the driving motor operation mode to the cross off mode as shown in Fig 8B. By this control, it is possible to obtain a sufficient time period where hold excitation of the conveyance motor 118 ~~do~~ does not overlap with the load on the other driving motor and only the conveyance motor 118 is under the load of hold excitation. Thus, more accurate battery voltage detection can be performed. As a result, even in a case where it takes a long time to perform printing for one page of a print sheet, consumption of the battery power source can be detected, thereby the termination operations can be properly performed before power-off of the apparatus.

On the other hand, if RES > c holds, the driving motor operation mode is changed to a normal mode as shown in Fig. 8A, in which the carriage motor 114 and the conveyance motor 118 are simultaneously actuated so as to prevent reduction of the printing speed while the loads on ~~the~~ both motors overlap.

The paragraph starting at page 35, line 27 and ending at page 36, line 7 has been amended as follows.

In the above embodiment, droplets discharged from the printhead are ink droplets, and liquid stored in the ink tank is ink. However, the liquid to be stored in the ink tank is not limited to ink. For example, ~~processed~~ processing liquid or the like to be discharged onto a print medium so as to improve the fixing property or water repellency of a printed image or its image quality may be contained in the ink tank.

The paragraph starting at page 36, line 17 and ending at page 37, line 13 has been amended as follows.

As the typical arrangement and principle of the inkjet printing system, one practiced by use of the basic principle disclosed in, for example, U.S. Patent Nos. 4,723,129 and 4,740,796 is preferable. The above system is applicable to either one of the so-called on-demand type or ~~a~~ continuous type. Particularly, in the case of the on-demand

type, the system is effective because, by applying at least one driving signal, which corresponds to printing information and gives a rapid temperature rise exceeding nucleate boiling, to each of electrothermal transducers arranged in correspondence with a sheet or liquid channels holding a liquid (ink), heat energy is generated by the electrothermal transducer to effect film boiling on the heat acting surface of the printhead, and consequently, a bubble can be formed in the liquid (ink) in one-to-one correspondence with the driving signal. By discharging the liquid (ink) through a discharge opening by growth and shrinkage of the bubble, at least one droplet is formed. If the driving signal is applied as a pulse signal, the growth and shrinkage of the bubble can be attained instantly and adequately to achieve discharge of the liquid (ink) with ~~the~~ particularly high response characteristics.